



Peculiarities of Pain Syndrome in Women with Pelvic Organ Diseases in Neurological Practice

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Abstract: In the 21st century, the medical community has faced the challenge of combating pathologies of the musculoskeletal system, increasing life expectancy, and sedentary lifestyles. Among the priority areas in this field are degenerative and inflammatory joint diseases, osteoporosis. However, in addition to diseases of the musculoskeletal system, a great role should be given to somatic pathology accompanied with back pain. Pain syndromes in diseases of the pelvic organs in women is a complex problem that requires a multisystem approach in cooperation not only with gynecological specialists, but also with neurologists, urologists, surgeons and other specialists. Prolonged pain syndrome leads not only to physical discomfort, but also moral and leads to loss of ability to work, and problems in the family. The main localization of pain syndromes in diseases of the pelvic organs in women is the pelvic region and the back.

Key words: pelvis, back, neurology, pelvic pain.

Introduction. Chronic pelvic pain is manifested by painful sensations in the pelvic region, which is not associated with the menstrual cycle and lasts more than 6 months with loss of ability to work and the need for medical or surgical intervention. According to the ICD-10 definition, dorsopathies are understood as a complex of musculoskeletal system lesions with involvement of connective tissue elements, accompanied by pain syndrome in a certain area of the back and functional disorders [3].

The most life-threatening causes of back pain can be acute inflammatory diseases, complications of pregnancy, malignant neoplasms, both primary and secondary [2,8]. Treatment of pain syndromes has its own difficulties, as there is often an incorrect diagnosis of the underlying cause and, as a consequence, it is difficult to select pathogenetically based therapy. The article presents clinical features of the course of pain syndrome, diagnostic criteria, principles of management, diagnostic algorithm, as well as the tactics of treatment of patients with these problems.

According to the definition, which was formulated by the International Association for the Study of Pain (IASP, International Association for the Study of Pain) in cooperation with the World Health Organization (WHO), "pain" or "pain syndrome" is an unpleasant sensation and emotional tension associated with real or possible tissue damage and described in terms of such damage" [1,5].

Chronic back pain (BP) is one of the most common reasons why patients seek medical attention. When analyzing complaints of BS in the general population, it was found that the number of people who attempt self-treatment is three times higher than those who seek help from formal medical professionals [3,10]. The frequent recurrence of pain makes patients seek qualified help, and a detailed study of each individual patient is necessary to identify the causes of pain syndrome [7]. The search for the causes of dorsopathy, which is manifested by back pain, is based on physical, instrumental, and laboratory data, subject to an individualized approach to each patient. Management of this category of patients represents an actual multidisciplinary problem in modern clinical medicine.

According to the definition of the European Association of Urology (EAU, 2018), chronic pelvic pain is a prolonged or persistent pain that is localized in the structures of the pelvis and back and lasts for more than 6 months. In addition to the main pain syndrome, various disorders of GI function, urogenital system, sexual sphere, as well as various psycho-emotional and behavioral disorders are observed in the structure of PTB. There are specific diagnostic criteria for this type of pain: duration of more than 6 months, no effect of treatment, the severity of the pain syndrome does not correspond to the degree of the lesion, limitation of physical activity, disorders of psychoemotional background, behavioral disorders [1].

There are different data on the prevalence of this pathology in women, in the world literature this figure varies from 4% to 24% [9]. Quite often chronic pain is the reason for diagnostic laparoscopies and an indication for uterine removal, and according to studies, in the United States, the annual costs of this pathology vary from 1 to 2 billion dollars [8]. This pathology occurs mainly in women of young age, and a characteristic feature is that these patients do not seek professional help for a long time, about 2-3 years after the first signals appear.

Anatomo-physiological features of the pelvic organs

The organs of the small pelvis receive two systems of innervation. The somatic part is responsible for the sensitivity of the skin and mucous membranes, and is also responsible for the motor function of the transverse striated muscles. The autonomic part innervates all internal organs and some deep structures. Parasympathetic innervation is provided by the inferior subcostal plexus, whose nerves are responsible for the vagina (upper third), uterus (cervix and lower segments) and neck ligaments. Sympathetic innervation occurs by afferent fibers in the bladder, the broad ligament of the uterus, its fundus, as well as in the middle third of the fallopian tubes, while the lateral parts of the fallopian tubes and ovaries give off fibers to the superior mesenteric plexus, further going to the lower thoracic segments (Th10-Th12) of the spinal cord.

Features of the pathogenesis of pain syndrome

Sensory information from various parts of the pelvic organs comes to the same segments of the spinal cord as afferentation from abdominal organs creating the so-called cross innervation, with the bodies of these neurons lie in the ganglia of the posterior roots and there creates synapses with other neurons, including neurons of peripheral fibers that transmit pain sensitivity. This structure is the reason that as a result of such interactions irradiation of pain sensations arising in visceral pain syndrome, which leads to difficulties in determining the localization of the pain source. Based on the ISAP (International Association for the Study of Pain) classification of 2019, two variants of pain syndrome development are distinguished: chronic primary pain, in which the etiologic factor cannot be precisely determined (e.g., chronic pelvic pain syndrome), and chronic secondary visceral pain, the causes of which may be mechanical, vascular, and inflammatory factors [3, 5]

The formation of chronic pain syndrome is based on an imbalance between the nociceptive and antinociceptive systems, which can occur when pain sensations are ignored for a long time or when the underlying pathology (including pain syndrome) is not properly treated. As a result, there is a decrease

in pain threshold and activation of the nociceptive system, which is represented by free peripheral endings of sensory nerve fibers type A (myelinated) and C (unmyelinated). As a result of activation of this system, there is an increase in the number of receptors associated with type C fibers, which are responsible for the transmission of chronic pain impulses and, as a consequence, peripheral sensitization develops [13].

The neuropathic component of chronic pain is based on a violation of the threshold of electrical excitability of the nociceptive system, activation of "sleeping" nociceptors, pathological impulses from demyelinated areas, and a decrease in inhibitory mechanisms [8, 12].

In addition to the neuropathic component, the muscular component may also be involved in the long-term pain process, as a result of which various myofascial syndromes may develop, thus creating a vicious circle. Myofascial syndromes can occur at any stage of the disease and even with successful therapy of the underlying disease, pain syndrome due to the involvement of the pelvic musculature and peripheral nerves, the pain syndrome can not only persist, but even increase.

Clinical features of the pain syndrome

Diseases of the organs of the small, accompanied by chronic back pain can be divided into uterine and ectopic. To the first can be attributed atypical bleeding from the uterus, polyps of the endometrium and cervix, endometritis, leiomyoma, adenomyosis, etc. Ectopic causes include ectopic pregnancy, salpingitis and salpingo-oophoritis, ovarian cysts, etc.

Among these causes the most common is endometriosis, which according to various data occurs in almost 180 million women aged 18 to 50 years, [3,8] and laparoscopically confirmed endometriosis is detected in 25% of women with chronic back pain [4,10].

As it is known, in endometriosis there is hyperproduction of growth factors of nervous tissue as a result of pathologic sprouting, in which neuronal outgrowths arise, atypically branching that gives prerequisites for pathologic activity [5]. Examination of biopsy specimens reveals an increased number of sensory fibers of type A, C, cholinergic and adrenergic fibers, resulting in increased production of various neurotransmitters such as calcitonin gene-related peptide, substance P and others [1]. Another factor is a deep overgrowth of endometrium resulting in mechanical ischemization of nerve fibers, which then develops a demyelinating process, in response to which a regenerative mechanism is activated, in which the structure of the nerve fiber changes, neuromas are formed, in which ectopic foci of neuronal pacemakers develop [3,5].

Another frequent cause of chronic pain is inflammatory diseases of the pelvic organs, namely, late onset of therapeutic measures or inadequate therapy resulting in chronicization of the pathological process with the formation of adhesions [13].

In the basis of the development of pain syndrome to a greater extent lies a long-lasting pathological afferent impulse from inflammatory foci in the stem, subcortical and cortical sensory centers, which leads to an imbalance of the functional state, affecting the peripheral interoreceptive stimuli and as a consequence develops a vicious circle causing neuroendocrine disturbances and increased pain syndrome [14].

Diagnosis: The diagnostic standard of investigation of women with pain syndrome should include clinical, neurological and instrumental examination (ultrasound, radiography MRI) and, if necessary, diagnostic laparoscopy [6].

When studying the clinical features of pain, in addition to a carefully collected anamnesis, it is necessary to use various scales (e.g., 10-point analog pain scale) and questionnaires, as this is an additional useful tool that allows the doctor to study the anamnesis in more detail, to follow the

patient's reaction to important moments in the history of the disease and to obtain more objective information about the nature of pain. It is necessary to find out the problems associated with the functioning of the digestive, genitourinary or sexual sphere, to identify the interrelation of them with the pain syndrome. Most often, the pain syndrome in gynecological diseases runs in the form of chronic lumbalgia of moderate severity in the sacrum.

A great role is played by the correct identification of pain localization, for which it is advisable to use specific pain maps, since chronic pain is most often localized in certain dermatomes and on the basis of localization and characteristics of pain can make a preliminary conclusion about the pathological process. For example, if the pathological process is localized in the area of the cervix, as well as its lower segment, pain along the uterosacral ligaments extends to the lower back with irradiation to the buttocks and the posterior surface of the lower extremity. If the pathology is localized in the middle third of the fallopian tubes, then the pain syndrome spreads to the lower part of the abdominal wall, with the involvement of the ovaries in the process, the pain irradiates to the front of the abdominal wall and the navel area.

Other features of chronic pain syndrome of somatogenic genesis are the lack of influence on the severity of pain of movements in the spine, increased severity of pain syndrome with prolonged standing in an upright position, as well as areas of hypersensitivity (the so-called Zakharyin-Ged zones [3].

Thus, diagnosis of the pathogenetic factor of chronic pain is necessary for differential diagnosis with acute pathologic processes.

Treatment: For adequate therapeutic measures in chronic pain, first of all, it is necessary to identify the cause and mechanisms of the syndrome, and then use a pathogenetically based comprehensive approach to therapy. First of all, in order to control the pain syndrome it is necessary to choose an analgesic with high efficacy, for example, antispasmodic drugs are effective in conditions accompanied by involvement of smooth muscles and blood flow disturbance in the organ, and glucocorticosteroids are a method of pathogenetic treatment of pain due to myofascial or joint component, as they have, among other things, anti-inflammatory and anti-edematous effect and can be used both locally and systemically [4, 11].

Oral contraceptives are used as treatment for the underlying disease, but although different groups of these drugs have equivalent efficacy, their side effects must be considered in long-term therapy. Surgical approach in the treatment of chronic pain syndrome has an efficacy of 50% to 80% and implies the use of endocoagulation of sacroiliac ligaments, resection of the superior subcostal plexus and other methods, up to radical surgery [7].

Physiotherapy, manual therapy, and various methods of physical therapy are used as additional methods, especially when myofascial component is involved. Also, an integral component in the therapy of chronic pain syndrome is methods of psychological support. As it is known, patients with chronic pain syndrome quite often have behavioral changes and impaired quality of life, so the use of traditional methods of treatment in combination with methods of cognitive-behavioral psychotherapy helps to increase the effectiveness of therapy [6].

Conclusions: As we see, chronic pain in various diseases of pelvic organs is not only a problem of gynecologists, but also of neurologists, and therefore a joint multidisciplinary approach significantly increases the chances of accurate diagnosis and allows more correct therapeutic measures. It is also necessary to note the importance of complex therapy of pain syndrome using the whole arsenal of therapeutic, surgical, physiotherapeutic and psychological methods [12]

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